



# **The Aggregate Handbook**

Edited by  
Richard D. Barksdale

Professor of Civil Engineering  
Georgia Institute of Technology

**National Stone Association**  
Washington, D.C.



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faced by industry today, problems such as how to recognize the minerals on one's land and bring them to a profitable sale. Also considered are problems such as those industry faces in zoning, permitting, and developing effective community relations. This book does not solve all of industry's difficulties, but it does point the way to possible solutions.

In practical terms, this is the type of reference work that a state highway official can pull off the shelf for an immediate answer to a problem involving the use of aggregate as a roadbase. Or that an engineer at a stone plant can use to help design a more productive flow of material from quarry face to stockpile.

## 1.3 Definitions of Terms

What do we mean when we say *aggregate* and *the aggregate industry*? As the authors use the term in this handbook, the word *aggregate* refers to any combination of sand, gravel, and crushed stone in their natural or processed state. Therefore, as used in this handbook, the *aggregate industry* means the crushed stone, sand, and gravel industries as a whole. Furthermore, the term *aggregate* is divided into two subterms: *fine aggregate* and *coarse aggregate*.

*Fine aggregate* is considered to be any material that passes a  $\frac{3}{4}$ -in sieve, and essentially all of which passes a No. 4 sieve (0.187-in. square opening) and is predominantly retained on the No. 200 sieve.<sup>1</sup>

*Coarse aggregate* is generally considered to be crushed stone or gravel almost all of which is retained on a No. 4 sieve.<sup>1</sup>

We also will use the term *construction aggregate*, and this can be defined as any combination of sand, gravel, and/or crushed stone sold to or used by the construction industry.

This handbook discusses both fine and coarse natural aggregate, both crushed and uncrushed. Processed aggregate such as slag, expanded clay-shale, or recycled material is not considered in this reference work because they are not natural products and must be handled differently. Specifically, recycled material often contains steel reinforcing (that must be removed) and large sections of cement mortar (that may pose problems when incorporated in new concrete mix designs). Slag and processed aggregate also are handled differently than the natural products, and their chemical and physical properties may be different from naturally occurring materials.

*Crushed stone* can be composed of limestone, granite, traprock or any other hard, sound rock that is produced by blasting and then crushing. Crushed stone is screened to a specified size at the site in stationary or portable plants.

*Sand and gravel* is any clean, unconsolidated mixture of fine and/or